

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently Amended) A handheld personal assistant operated by a user comprising:

a categorizer configured to store a plurality of data items in a database organized by ~~one~~
~~or more~~ categories of information that are grouped into a calendar category, an address book
category and a to-do-list category wherein each category of information includes one or more
subcategories of information that are linked in a hierarchical structure;

a voice-recognizer configured to recognize the user's voice and transform an expression
input by the user into a different mode of information;

a context processor configured to determine the category of information corresponding to
the expression input by the user, based on one of a direct context specified by the user or an
inferred context based on the expression input and maintain the storage of the data items by the
categorizer in the determined category of information until a new category of information is
determined; and

a natural-language processor configured to process the mode of information to extract a
piece of information from the determined category of the database;

wherein if there is ambiguity with the mode of information to extract from a first category of
information, the natural-language processor provides a first response to the user having a
plurality of options, the natural-language processor then provides a second response based upon
the user's selection from the options.

2. (Original) A handheld personal assistant as recited in claim 1, wherein the processor analyzes the expression grammatically and semantically to transform at least a part of the expression into at least one instruction.
3. (Cancelled) A handheld personal assistant as recited in claim 2, wherein based on the person's voice, the personal assistant only allows the person to access the piece of information that is personal to the person.
4. (Previously presented) A handheld personal assistant as recited in claim 2,

wherein the personal assistant only allows the user to access the piece of information that is personal to the user if the natural-language processor recognizes of the user's voice.
5. (Previously Presented) A handheld personal assistant as recited in claim 1 2, wherein the piece of information is selected from ~~a list consisting of a personal~~ the address book category, a the to-do-list category and a the calendar category.
6. (Cancelled) A handheld personal assistant as recited in claim 5, wherein the expression can be one or more words; and wherein the piece of information depends on the context under which the person made the expression.

7. (Original) A handheld personal assistant as recited in claim 5, wherein said personal assistant further includes a display to display the piece of information.
8. (Original) A handheld personal assistant as recited in claim 5, wherein said personal assistant further includes a voice synthesizer that transforms the piece of information into sound to communicate to the person.
9. (Previously presented) A handheld personal assistant as recited in claim 5,

wherein the piece of information was entered into the assistant by the user, and

wherein the personal assistant further includes a a formatting process that transforms the expression input by the user into a question with one or more phrases corresponding to the one or more categories of information, and a transformation process that converts the question into an instruction comprising a query to the database.
10. (Original) A handheld personal assistant as recited in claim 9, wherein the piece of information was entered through voice.

11. (Cancelled) A hand held personal assistant as recited in claim 9, wherein the person identifies a category to help the categorizer store the piece of information into the database.
12. (Original) A handheld personal assistant as recited in claim 5, wherein if the assistant cannot resolve an ambiguity in the expression, the personal assistant provides the person with a number of alternatives to resolve the ambiguity.
13. (Cancelled) A handheld personal assistant as recited in claim 5, wherein based on the person's voice, the personal assistant only allows the person to access the piece of information that is personal to the person.
14. (Cancelled) A handheld personal assistant as recited in claim 1, wherein the expression can be one or more words; and wherein the piece of information depends on the context under which the person made the expression.
15. (Cancelled) A handheld personal assistant comprising: a voice-recognizer configured to transform an expression from a person into a text string; and a natural-language processor configured to process the text string to understand the text string and initiate an appropriate action, wherein the appropriate action is dependent on a context associated with the expression.

16. (Cancelled) A handheld personal assistant as recited in claim 15, wherein the content is inferred from the expression by the natural-language processor.

17. (Cancelled) A handheld personal assistant as recited in claim 15, wherein the piece of information is selected from a list consisting of a personal address book, a to-do-list and a calendar.

18. (Cancelled) A handheld personal assistant as recited in claim 15, wherein the processor can extract, from a database, a piece of information that is personal to the person, and cause the piece of information to be presented to the person as the appropriate response.

19. (Cancelled) A handheld personal assistant as recited in claim 18, wherein the processor can still extract the piece of information when the person declares the expression differently.

20. (Cancelled) A handheld personal assistant as recited in claim 18, wherein said personal assistant further includes a display to display the piece of information.

21. (Cancelled) A handheld personal assistant as recited in claim 15, wherein the processor analyzes the expression grammatically and semantically to transform at least a part of the expression into at least one instruction.

22. (Cancelled) A handheld personal assistant as recited in claim 15, wherein based on the person's voice, the personal assistant only allows the person to access the piece of information that is personal to the person, and excludes others from accessing the information that is personal to the person.

23. (Cancelled) A handheld personal assistant as recited in claim 15, wherein the processor can still extract the piece of information even if the expression is ambiguous, and wherein the recognizer has been previously trained to recognize the person's voice, but not another person's voice.

24. (Cancelled) A handheld personal assistant comprising: a receiver configured to receive an expression from a person; and a transmitter configured to transmit the expression to a second system, which is configured to transform the expression into a different mode of information; process the mode of information to extract, from a database, a piece of information that is personal to the person; and transmit the piece of information back to the handheld personal assistant; wherein the handheld personal assistant and the second system are connected wirelessly.

25. (Cancelled) A handheld personal assistant as recited in claim 24, wherein the second system can still extract the piece of information when the person declares the expression differently.

26. (Currently amended) A method for obtaining information for a requestor interacting with a handheld computing device, said method comprising:

storing a plurality of data items in a database organized ~~by two or more~~ categories of information that are grouped into a calendar category, an address book category and a to-do-list category wherein each category of information includes one or more subcategories of information that are linked together in a hierarchical structure;

receiving an input voice expression from the requestor;

converting the input voice expression into a text string;

processing the text string using grammatical and semantic processing to determine a natural language meaning for the text string;

determining a category of information corresponding to the input by the requestor based on one of a direct context specified by the requestor or an inferred context based on the expression input;

extracting a piece of information from the determined category of information based upon the input voice expression;

determining if there is an ambiguity with information extracted from the category of information;

transmitting a plurality of choices to the requestor if an ambiguity is determined;

resolving the ambiguity based upon the requestor's response to the plurality of choices and repeating the extracting step; and

maintaining the storing of the data items and the extracting of the piece of information in the determined category of information until a new category of information is determined.

27. (Previously Presented) A method as recited in claim 26, further comprising the steps of:

transforming the input expression into a question format; and

converting the resulting question into an instruction comprising a query to the database.

28. (Original) A method as recited in claim 27, wherein said performing further comprises:

presenting the retrieved information to the requestor.

29. (Cancelled) A method as recited in claim 26, wherein said processing comprises:

determining a content associated with the input voice expression, and wherein said performing operates to perform an action based on the natural language meaning and the context.

Attorney Docket No.: 490.11
Application No. 09/964,947
Amendment dated May 22, 2006
Reply to Office Action dated Dec. 20, 2005

PATENT